Health financing to promote access in low income settings—how much do we know?

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Lancet 2004; 364: 1365–70

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In this article we outline research since 1995 on the impact of various financing strategies on access to health services or health outcomes in low income countries. The limited evidence available suggests, in general, that user fees deterred utilisation. Prepayment or insurance schemes offered potential for improving access, but are very limited in scope. Conditional cash payments showed promise for improving uptake of interventions, but could also create a perverse incentive. The largely African origin of the reports of user fees, and the evidence from Latin America on conditional cash transfers, demonstrate the importance of the context in which studies are done. There is a need for improved quality of research in this area. Larger scale, upfront funding for evaluation of health financing initiatives is necessary to ensure an evidence base that corresponds to the importance of this issue for achieving development goals.

Introduction

Adequate, well managed financing of the public health system continues to elude most countries. The difficulty is especially severe in low income countries, in which health systems struggle with meagre and inequitably distributed resources. Additionally, access to services for the most disadvantaged is usually very poor, further reducing the benefit of already scarce resources for those most in need.[1,2]

The WHO Commission on Macroeconomics and Health made a case for more investment in health by both donor nations and low income country governments to attain the average of $34 per head expenditure needed to make basic health care available.[3] The governments of many low income countries are challenged to raise their share of this sum in an efficient, sustainable, and politically acceptable way. In the meantime, many of the poorest people in the world already pay for private services. In 1999, the World Bank estimated that government health expenditure in Cambodia was $2 per head and out-of-pocket spending was over $33.[4] Often, a major component of the private sector is services provided by cash-strapped public sector employees, with some combination of public sector financed drugs, facilities, and time. Health financing, both in terms of raising resources and of ways to manage those resources, is the cornerstone of strategies to address these difficulties. Evidence of what works, and how governments can generate and manage finances in a sustainable and equitable way, is vital. The need for greater evaluation of the distributional impact of policies and programmes has also been emphasised.[5]

Methods for gathering evidence have developed rapidly in disciplines such as clinical practice. In particular, systematic reviews of intervention trials are being undertaken to provide an overview of existing research and reduce bias in the reporting and interpretation of results. Methods of synthesis are less developed for topics related to health systems. The Cochrane Collaboration, through its Effective Practice and Organisation of Care (EPOC) group, is seeking to extend systematic reviews to a range of topics relevant to the organisation and delivery of care.[6,7] In view of the difficulties of applying randomised controlled trial methods to all such topics, the group includes some non-randomised designs such as interrupted time series and controlled before and after studies.

Success or otherwise of different health financing strategies can be measured along several dimensions, such as effect on provider and user behaviour, overall consequences for revenue generation and efficiency, and effect on equity of access and on health outcomes. Health financing can also be studied from a number of disciplinary perspectives. With our main focus on studies with a similar approach to the Cochrane Collaboration's EPOC, we outline research that has been undertaken on the impact of various financing strategies on health systems access, utilisation, or health outcomes in low income and middle income countries. We focus on study design and approach, to give a sense of the nature of evidence that exists and its strengths and weaknesses, as well as discussing the implications for policy. Existing studies present a broad array of research approaches, from the highly quantitative to the highly qualitative. Recognising this variety, as well as the value of reviewing evidence more systematically, we have tried to step across the traditional divide between clinically oriented ways of

Search strategy

For this article, we did not do a systematic review, but we attempted to do as broad a search as time allowed. We searched PubMed, Web of Science (Science Citation Index and Social Science Citation Index), BIDS IBSS, ELDIS, HEED, ID21, and a number of grey literature databases. We limited our search to articles in English published since 1995. Keywords and MeSH terms included "econom*", "financ*", "health care", "access", "socio-economic factors" and "delivery of health care" "health care reform", "health services accessibility", "health care rationing", "health care costs", "health resources", "health services needs and demand" "health care surveys" "health expenditures". Editorials and letters were excluded from the searches and the search was limited to research from developing countries and regions consisting of such countries (Africa, Asia, and Latin America). Additionally, the references of key articles and documents were examined. Grey literature known to the authors or that was identified during the period of the search was also reviewed.

Panel: Overview of study types

Policy review
Policy reviews or critiques, which reviewed findings of other studies or policy options, or described and critiqued policies in different settings.

Descriptive case study
Descriptions of programme design and implementation or assessments of programmes, which may be small-scale. They may contain quantitative or qualitative data on some aspects of implementation or effect.

Cross sectional
Studies that compared different areas with and without interventions, but had no baseline and could not allow for systematic differences between the areas.

Before and after
Provided data on effect of an intervention starting before and continuing after its introduction, but with no clear point in time at which one intervention occurred—therefore not fully conforming to the interrupted time series definition below.

*Interrupted time series**
Provided at least three data points from before and three from after an intervention, and a clear indication of when the intervention took place. The intervention effect can be measured against the pre-intervention trend.

*Controlled before and after**
Included data before and after the effect of an intervention, and incorporated a control group, but the selection of the intervention and control areas was not random.

*Randomised and quasi-random cluster controlled trials**
An attempt is made to reduce systematic differences between intervention and control groups by using some form of randomisation or quasi-random allocation criteria for intervention and control groups.

*Acceptable for inclusion in an EPOC review.

assessing research evidence and those more recognised in the social sciences. The large body of case studies that fall outside of the EPOC criteria is also briefly described and their strengths and weaknesses are discussed.

Definitions

Subject matter and methods of the papers identified were reviewed during a screen of titles and abstracts. For subject matter, we defined interventions of interest as those that encompassed different approaches to raising financial resources and/or disbursing them, where a main objective was to improve access to health services. Improving access can be achieved either by (1) reducing barriers to uptake of existing services, (2) increasing demand for existing services, by boosting quality or providing incentives for uptake or (3) extending service coverage to previously underserved areas. Our focus would ideally be limited to evidence of greater uptake of necessary interventions by poor or vulnerable groups. However, in view of the absence of data, we include studies that provide data on overall changes in use.

Cost recovery strategies, which might be expected to limit access by introducing a financial barrier, have been included because they are frequently justified on the grounds that they might improve access for poor groups by generating resources with which to improve the quantity and quality of services, and, or, ending informal charging. Contracting services to private providers in underserved areas, and conditional cash transfers (dependent on the uptake of certain health services), are included in this review as policy initiatives to extend or increase public sector service uptake. We excluded topics such as use of the private sector, and decentralisation and resource allocation, as these were seen as broader than financing interventions per se.

We looked for studies that had used methods that approximated to the EPOC criteria. This meant that we focused on papers that presented at least primary data on the impact of a specific financing intervention on utilisation, or a comparison of the impact of two or more interventions, and data over time. Ideally the studies would also include data from before and after the intervention and data from a control group

An overview of classifications of study type that emerged, reflecting a combination of the EPOC criteria and the nature of the papers that we found, is shown in Table 1. Very few studies fell into the categories that we sought. The vast majority of papers were either case studies or policy reviews. Those that came closest to our study designs of interest are briefly reviewed for the major topic headings of user fees, community-based prepayment or insurance schemes, national health insurance, contracting out, and conditional cash transfers.

User fees

Many of the better known empirical studies and reviews of the effect of user fees were reported before 1995.[8–11] From 1995 onwards, we noted several studies from Africa, presenting usage data before and after the introduction or removal of user fees. None included data from a control group and most did not fully conform to the EPOC group's definition of interrupted time series. Kenya's introduction of outpatient fees in the early 1990s provided a good opportunity for assessment of their effect.[12–14] One article provides use and revenue data from six national indicator districts for 1989–93, during which fees were implemented, suspended, and subsequently re-introduced.[12] Two more studies present data that are more localised geographically and monitor trends for about 2 years.[13,14] Zambia's health sector reform in the 1990s included the introduction of charging, and attendance and admissions data for hospitals and health centres in 21 of 67 districts have been analysed for 1993–97.[15] Tracking the exempted services of measles vaccination and deliveries, the researchers commented on trends in services subject to charges, and underlying trends in service uptake that might have been caused by changes in quality and supply as a result of the broader health sector reform process. In Zaire, use was tracked in one health district for 60 months during which user fees rose strikingly and attendance fell.[16] Alternative explanations for the fall in attendance such as quality issues were

considered. In Uganda, before and after data for 25 months show the effect of community introduced cost-sharing on use at 11 health units in one district.[17] Fees were retained at the facility and used to make substantial incentive payments to staff. All facilities in the district had introduced fees, so a subsample of clinics was chosen to attempt to control for confounding factors such as staff transfers, drug shortages, and disease outbreaks. Finally, a small scale study in South Africa looked at uptake of curative, antenatal, immunisation, and growth monitoring services at one mobile clinic over the period 1992–98, during which user fees were withdrawn. Here, some confounding variables were discussed but the study design did not allow them to be controlled for.[18]

In all studies, an overall fall in use accompanied the introduction of charging (or vice versa in South Africa),[12–18] although in Uganda some rural facilities saw a rise in uptake.[17] What this finding implied for efficiency and equity of service delivery overall was less clear. Data about who changed their use and for what type of service were usually not presented. Fees were often accompanied by the introduction of measures to improve service quality, or changes in the services available, and it is difficult to separate the effects of the two. Implementation issues that were emphasised included the importance of appropriate and effective exemption mechanisms,[12,14,15] high levels of community involvement and incentive payments to staff,[17] and the possibility that when user fees were removed, increased attendance for curative services might impede adequate preventive attendance.[18]

Community-based insurance or prepayment schemes

For micro insurance and community prepayment schemes, we drew on a review by the International Labour Organisation[19] on the effectiveness of community-based health organisations as a mechanism for social protection. The review included information on 258 cases from 127 documents, either grey literature (publications issued by academic, business, government, and industry that are not controlled by commercial publishing interests) or peer-reviewed reports. The review criticised an overconcentration on issues of enrollment and the financial health of schemes, and the failure to address the question of whether enrollment in a scheme brought positive benefits to enrolled individuals and communities overall. Additionally, few schemes had been followed up over time, and no assessments looked at schemes that had failed. The small size of schemes was noted: 50% of those reviewed had fewer than 500 members. Key difficulties that affected the internal validity of the studies were identified as an absence of baseline data, absence of control groups, difficulties in sampling, absence of control for confounding variables, and weak sources of data. Other recent reviews, one a systematic review of voluntary, not-for-profit, community-based health insurance, have emphasised similar problems.[20,21]

Comparison of alternative cost-recovery schemes

A few reports compared uptake with user fees with that under a more pooled system of prepayment. A controlled before and after design was used in Niger to compare the effect on use of different payment methods.[22,23] Three similar districts were included: in one, user fees were instituted, in the second, a form of social financing was introduced (a local annual tax for district taxpayers plus a smaller user fee), and the third was a control district in which no changes were implemented. Quality improvements were instituted in intervention districts but not the control district. Use stayed at the same rate in the control district over the study period while both intervention districts recorded a rise in use, as a net effect of the combination of charges and quality improvements. Use rose more in the district with a tax and a smaller fee, especially among those living close to the facilities. This investigation recorded changes in use by socioeconomic group, and showed significant increases in uptake by the poor, women, and children in the district with a tax and a smaller fee. However, a shortcoming of this investigation was the short time frame of assessment.

Schneider[24] compared use and expenditure of those enrolled in micro health insurance in Rwanda with those not enrolled (who had to pay user fees). 1 year after the start of the schemes, much higher uptake rates and faster care-seeking were recorded for those with insurance than for those without. The probability of service use still rose with socioeconomic status for the uninsured, whereas this difference was not substantial in the insured. However, an enrollment rate of 8%, although high for such schemes, shows the rapid scaling up that would be necessary for the schemes to start to improve accessibility of services for all.

National health insurance

To experiment with large-scale insurance schemes is clearly hard. Most studies of national insurance systems are in the form of descriptive case studies, such as one in Thailand.[25] Researchers in Colombia analysed whether out-of-pocket payments became less regressive after the Colombian health-care reform of 1993. This reform extended health insurance coverage to previously uncovered groups, such as informal sector employees and the poor, who were identified by a proxy means test.[26] Data from three nationwide surveys between 1985 and 1997 were used to examine changes before and after the reform. No controls were available, and data were available for only a few years after full implementation of the reform. Findings are not conclusive, revealing a regressive trend if out-of-pocket expenses are compared with household income, and a progressive one if they are compared with household expenses. Dow and Schmeer[27] assessed the effect of a large national health insurance expansion in Costa Rica in the 1970s. Having controlled for other factors that varied alongside the introduction of health insurance, the researchers recorded that an

expansion in insurance did not have a major role in the decline of infant and child mortality in Costa Rica.

Contracting health services

Researchers in Cambodia assessed two models of contracting for health services against control districts.[27] Districts were selected randomly and assigned either to contracting out (two districts), contracting in (three districts) or controls (four districts). Under contracting out, non-governmental organisations were given full responsibility for the delivery of specified services in a district, including drug procurement and hiring and firing of staff. Under contracting in, non-governmental organisations worked within the existing system to strengthen district administrative structures. Control districts received no external support but did receive a small subsidy toward service delivery. On the basis of a household and facility survey 2 and a half years after contracts started, contracted districts outperformed control districts in terms of predefined coverage indicators such as immunisation and attended deliveries. Contracted-out models outperformed contracted in. Much of the rise in health-care use in contracted districts was attributed to enhanced use by households of low socioeconomic status. However, funding flows seem to have differed between the districts, with contracted-out districts receiving larger per head payments from government or donors. Some of the reported differences in use might be because of greater availability of resources in the contracted-out districts.

Conditional cash transfers

An innovation in Latin America is the use of conditional cash transfers to encourage households to access preventive health services, nutritional support, and education for children. Progresa (now Oportunidades) is a large-scale, incentive-based welfare programme in Mexico which includes educational, nutritional, and health components.[29] Poor families receive cash transfers conditional on (1) every family member attending preventive health services, (2) children aged under 5 years, and lactating mothers regularly attending health education and growth monitoring, and (3) pregnant women attending antenatal clinics. An additional cash transfer is given to families with school age children if they are enrolled and attend school.[30] During the roll out of the programme, some villages were randomly assigned to control or treatment groups, which made it possible to assess the effect on use of facilities and on health. Substantial improvements in both were reported.[30] The programme as a whole (including education and nutrition interventions) was associated with improved growth and reduced rates of anaemia in low income infants and children.[29]

In Honduras, a similar programme that made direct payments to families contingent on regular use of preventive health services was investigated in a cluster-randomised trial. Direct payments to households had a large effect overall on coverage of antenatal care and well-child checkups, although these payments might have acted as an incentive to increase family size too.[31] In Brazil another similar programme was assessed with a focus on child growth as the outcome.[32] The anthropometric status of Brazilian children who receive a monthly cash transfer conditioned on regular contacts with the health system was compared with that of a similar group of children who were selected to receive the same benefit but were then accidentally excluded. Because of this origin of the control group, no baseline data were available. A negative effect on anthropometric status was associated with participation in the programme. This could have been a result of differences between the two groups before the start of the programme, or of the perception by mothers (as a result of the design of a previous programme) that if their children gained weight they would be excluded from benefits.

Case studies

Applying the EPOC group criteria excluded almost all articles identified by our initial search because most were written as case studies or policy reviews. Case studies usually provided even less robust estimates of effect, but could provide useful insights into the context and factors that contributed to successful or failed implementation of financing approaches. Some case studies describe new or innovative programmes—eg, some examples include work on the Bamako Initiative,[11] vouchers for insecticide-treated nets in Tanzania,[33] the use of a health equity fund,[34] and incentive payments to health workers in Cambodia,[35] or, they analyse and seek to explain failed or inadequate implementation, such as failures of cost recovery or inadequate operation of exemption mechanisms.[16,36,37] Some of the reports reviewed above according to the EPOC group criteria also provided case study-style explanation of the quantitative trends reported; these were particularly useful from a policy-making point of view.[12,16]

Case studies sometimes combine qualitative and quantitative methods, although they are often criticised for doing neither well. While not producing statistically generalisable findings, the possibility of analytical/theoretical generalisation from case studies is recognised by qualitative researchers.[38–40] However, the case studies we reviewed almost universally failed to apply the explicit theoretical framework that would allow such generalisation. The broader relevance of findings was rarely discussed.

Discussion

Most health systems research remains small scale, with findings of restricted applicability. The evidence base on alternative modes of health financing in low and middle income countries is no exception. Our review highlighted both an absence of well designed large scale evaluations of the effect of alternative financing

interventions, and a multitude of case studies offering descriptions of specific experiences but with little methodological rigour.

Of the studies that were most in line with EPOC criteria, many were taking advantage of natural experiments or using data that were not obtained specifically for the purpose of the investigation. With the exception of the study on alternative cost recovery methods in Niger,[22] the assessment of Progresa[30] and the Cambodian contracting pilot,[28] there was little opportunity for evaluation to be planned systematically alongside implementation. This resulted in a range of limitations. In most cases there was an absence of socioeconomic data, an absence of controls, a short timeframe in which effects were measured, and difficulty in defining the desired outcome (eg, whether an increase in use improved health outcomes). Furthermore, more than one intervention was often implemented—eg, user fees with quality improvements, making it difficult to tease out causality. All these weaknesses stem from a combination of insufficient resources for large scale health systems assessment, the absence of demand by policymakers for better evidence and the practical difficulties of designing large scale experimental studies for a complex, system-wide issue such as health financing. Having controls in such studies can raise ethical issues, and randomisation might be difficult both ethically and practically, demanding involvement in the very early stages of policy design.[41] However, if planning and coordination were strengthened, more use could be made of both step-wedge designs (in which implementation occurs in a phased manner and areas act as controls before they receive the intervention),[42] and time series data from national level policy implementation.

Furthermore, any one study design has limitations and it is important to be aware of the strengths and weaknesses of different approaches. Robust intervention designs can address some questions but they might not be sufficient to guide implementation. Although the menu of financing options for any government is restricted, the range of ways in which the options can be implemented, packaged, succeed or fail is wide. The question is not only what to do (governments might have few alternatives), but also how to do it as successfully as possible. Even when large scale quantitative assessment studies provide clear evidence on the potential of specific interventions, there is often an important set of unanswered how and why questions related to implementation issues. These might be better answered by a series of case studies, which are argued to be good for understanding complex causal links between many variables.[39,43] Victora and colleagues[41] emphasise the complex causal pathways of many public health interventions, and emphasise the need to understand behavioural as well as biological steps at the systems level.

Conclusion

The reports we outline are more indicative of the published work than an exhaustive list. Extending the search to more languages and a longer time frame, and searching the grey literature in greater depth, will be a useful next step.

Reliable evidence on health financing in different settings is remarkably sparse. From this review, we can only make some cautious conclusions, but they are consistent with standard economic theory. User fees deterred use in many settings, although it is often unclear to what extent and what kind of use is most affected. Insurance systems have many attractions such as the potential for risk pooling and reduction of catastrophic expenditure, but the research evidence is still scanty for how these systems can be scaled up, and for their effect on equity. Conditional cash payments show promise for improving uptake of effective interventions and services for poor populations, but the studies cited above also show the dangers of creating an undesired response. Additionally, little is known about the implications of cash transfers for a household's broader livelihood set. The largely African origin of the user fee published work, and the Latin American origin of conditional cash transfers, also shows the importance of considering the context in which studies are done. The use of conditional cash transfers in a setting in which there are inadequate resources to provide free and quality services would be inappropriate. Investigations into contracting out (and other interventions) should avoid confounding by ensuring that there are no overall differences in resources available to intervention and control groups and would benefit from greater examination of the reasons why contracting may improve access.

Larger scale, more systematic work in many settings is badly needed, including plausibility studies as a form of non-randomised evaluation design, when randomised designs are impossible or inappropriate.[41] Developing appropriate ways of measuring socioeconomic status in data-poor contexts should be a priority, as well as more proactive engagement with policymakers to build up demand for this kind of research.

Important contributions could also be made by improving the quality of case study work, and through multicentre case studies that look across countries at why things do or do not work in specific settings. Such studies could provide crucial insights into the complex experiences that accompany failures of implementation.

A useful set of guidelines for improving the clarity of reporting of non-randomised designs has been provided by the TREND statement,[44] which complements those guidelines available for randomised designs.[45] The development and application of similar quality criteria for designing, undertaking, and reporting both large-scale quantitative and case study research on health financing is highly desirable. Larger scale, upfront funding for evaluation of health financing initiatives is also necessary

to ensure an evidence base that corresponds to the importance of this issue for reaching development goals.

Acknowledgments

Natasha Palmer, Lucy Gilson, Anne Mills, and Dirk Mueller are all members of the Health Economics & Financing Programme, which is funded by the UK Department for International Development. The Department supports policies, programmes, and projects to promote international development, and provided funds for this study as part of that objective but the views and opinions expressed are those of the author(s) alone. Funds from the Bill and Melinda Gates Foundation's Policy Research Network also supported this work. We thank John Eyers for sharing his knowledge of PubMed and other databases and Diane McIntyre for comments on a draft of this article.

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